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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/781,887

02/20/2004

David James Connell

13210-23

4261

1059

7590

09/07/2004

BERESKIN AND PARR

SCOTIA PLAZA

40 KING STREET WEST-SUITE 4000 BOX 401

TORONTO, ON M5H 3Y2

CANADA

EXAMINER

HOLLINGTON, JERMELE M

ART UNIT

PAPER NUMBER

2829

DATE MAILED: 09/07/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/781,887	CONNELL ET AL.	
	Examiner	Art Unit	
	Jermele M. Hollington	2829	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 February 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6 and 12-16 is/are rejected.
- 7) ☒ Claim(s) 7-11 and 17-18 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 February 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>07/04</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Drawings

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, substrate has two surfaces as claimed in claims 12-13 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement-drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

2. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-6 and 14 are rejected under 35 U.S.C. 102(b) as being anticipated by Wharton et al (6040530).

Regarding claim 1, Wharton et al disclose [see Fig. 2] an evaluation board (BGA test board 10 shown in Fig. 1) [see **Note** below], the board (10) comprising: (a) a substrate (image section 11) having a surface (not numbered but shown in Fig. 2); (b) a plurality of board pad patterns (BGA patterns 22-25) formed on the surface, wherein each of the board pad patterns (22-25) includes a plurality of board pads (interconnect pads 61, 71, 81 and 91).

[Note: The recitation “for evaluating one or more aspects of a surface mount technology system” has not been given patentable weight because the recitation occurs in the preamble. A preamble is generally not accorded any patentable weight where it merely recites the purpose of a process or the intended use of a structure, and where the body of the claim does not depend on the preamble for completeness but, instead, the process steps or structural limitations are able to stand alone. See *In re Hirao*, 535 F.2d 67, 190 USPQ 15 (CCPA 1976) and *Kropa v. Robie*, 187 F.2d 150, 152, 88 USPQ 478, 481 (CCPA 1951).]

Regarding claim 2, Wharton et al disclose each of said board pad patterns (22-25), the board pads (61, 71, 81 and 91) have a uniform shape, size and pad-to-pad spacing [see Figs. 3-6].

Regarding claims 3-4 Wharton et al disclose the size of board pads (256 of pads 61 or 324 of pads 71) of at least some of the board pad patterns (22 or 23) differs from the size of

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board pads (313 of pads 81 or 388 of pads 91) in at least some of the other board pad patterns (24 or 25).

Regarding claims 5-6, Wharton et al disclose the pad-to-pad spacing of board pads (61 or 71) of at least some of the board pad patterns (22 or 23) differs from the pad-to-pad spacing of board pads (81 or 91) in at least some of the other board pad patterns (24 or 25).

Regarding claim 14, Wharton et al disclose [see Fig. 2] an evaluation board (BGA test board 10 shown in Fig. 1) [see **Note** below], the board (10) comprising: (a) a substrate (image section 11) having a surface (not numbered but shown in Fig. 2); (b) a plurality of board pad patterns (BGA patterns 22-25) formed on the surface, wherein each of the board pad patterns (22-25) includes a plurality of board pads (interconnect pads 61, 71, 81 and 91).

[Note: The recitation “for evaluating one or more aspects of a surface mount technology system” has not been given patentable weight because the recitation occurs in the preamble. A preamble is generally not accorded any patentable weight where it merely recites the purpose of a process or the intended use of a structure, and where the body of the claim does not depend on the preamble for completeness but, instead, the process steps or structural limitations are able to stand alone. See *In re Hirao*, 535 F.2d 67, 190 USPQ 15 (CCPA 1976) and *Kropa v. Robie*, 187 F.2d 150, 152, 88 USPQ 478, 481 (CCPA 1951).]

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various

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claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

7. Claims 12-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wharton et al (6040530) in view of Morris et al (6020749).

Regarding claims 12-13, Wharton et al disclose [see Fig. 2] an evaluation board (BGA test board 10 shown in Fig. 1) comprising: a substrate (image section 11) having a surface (not numbered but shown in Fig. 2) wherein the surface has plurality of board pad patterns (BGA patterns 22-25). However, they do not disclose the substrate having two surfaces as claimed. Morris et al disclose [see Fig. 1A] an evaluation board comprising: a substrate (PCB board 102) having two surfaces (not numbered but shown in the Fig as a top side surface and bottom side surface of 102) wherein each surface has plurality of board pad patterns (top side BGA 101 for top side surface and bottom side BGA 103 for bottom side surface). Further, Morris et al teach that the addition of the substrate having two surfaces is advantageous because it helps secure a device under test to printed circuit board and the printed circuit board to a main board in order to have an accurate test results for de-bug analysis of the device under test during probe testing. It would have been obvious to a person having ordinary skill in the art at the time the invention was made to modify the apparatus of Wharton et al by adding another surface of the substrate as taught by Morris et al in order to secure a device under test to printed circuit board and the

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printed circuit board to a main board to have an accurate test results for de-bug analysis of the device under test during probe testing.

8. Claims 15-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wharton et al (6040530).

Regarding claim 15 Wharton et al disclose each of the board pad patterns (22-25) includes board pads (61, 71, 81 and 91) and the size of board pads (256 of pads 61 or 324 of pads 71) of at least some of the board pad patterns (22 or 23) differs from the size of board pads (313 of pads 81 or 388 of pads 91) in at least some of the other board pad patterns (24 or 25). However, they do not disclose the board pad patterns having area-filled board pads as claimed. It is well known in the art to have board pad patterns of Wharton et al to have area-filled board pads or any board pads where needed [see MPEP2144.06 *In re Ruff*, 256 F.2d 590, 118 USPQ 340 (CCPA 1958)]. It would have been obvious to a person having ordinary skill in the art at the time the invention was made to have the board pads of Wharton et al to be area-filled board pads or any board pads since the board pads of Wharton et al and the area-filled boards as claimed are functional or mechanical equivalents and it appears that the invention would perform equally well with board pads of Wharton et al.

Regarding claim 16, Wharton et al disclose each of the board pad patterns (22-25) includes board pads (61, 71, 81 and 91) and the pad-to-pad spacing of board pads (61 or 71) of at least some of the board pad patterns (22 or 23) differs from the pad-to-pad spacing of board pads (81 or 91) in at least some of the other board pad patterns (24 or 25). However, they do not disclose the board pad patterns having area-filled board pads as claimed. It is well known in the art to have board pad patterns of Wharton et al to have area-filled board pads or any board pads

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where needed [see MPEP2144.06 *In re Ruff*, 256 F.2d 590, 118 USPQ 340 (CCPA 1958)]. It would have been obvious to a person having ordinary skill in the art at the time the invention was made to have the board pads of Wharton et al to be area-filled board pads or any board pads since the board pads of Wharton et al and the area-filled boards as claimed are functional or mechanical equivalents and it appears that the invention would perform equally well with board pads of Wharton et al.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Baxter et al (5926696), Degani et al (6013877), Shih et al (6286208), Yap et al (6300781), Bjork (6476629), Yeoh et al (6600233), Hsieh (6564986) and Combs et al (6700800) disclose a method and apparatus for ball grid array on a circuit board.

10. Claims 7-11 and 17-18 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

11. The following is a statement of reasons for the indication of allowable subject matter: regarding claims 7-8 and 17-18, the primary reason for the allowance of the claims is due to an evaluation board having some of the size and pad-to-pad spacing of the board pads of the board pad patterns progressively changes from other board pads of other board pad patterns. Since claim 9 depends from claim 7, it is also allowed.

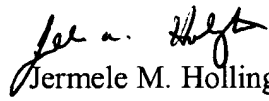
Regarding claim 10, the primary reason for the allowance of the claims is due to an evaluation board having the characteristics of the board pads of the board pad patterns being varied by its columns and rows. Since claim 11 depends from claim 10, it is also allowed.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jermele M. Hollington whose telephone number is (571) 272-1960. The examiner can normally be reached on M-F (9:00-4:30 EST) First Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Tokar can be reached on (517) 272-1812. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Jermele M. Hollington
Examiner
Art Unit 2829

JMH
September 2, 2004